

## HEALTHCARE INDUSTRY STUDY

### ABSTRACT

Our nation's healthcare system affects not only the well being of our citizens, but the strength of our society as a whole. Healthcare is a critical pillar of the national security framework that affects not only individual health, but also economic efficiency and public confidence. This industry is both complex and fragmented, consisting not only of consumers and producers/providers, but also of a multitude of third party payers that distort the economic efficiency of the market system. The U.S. spends \$1.4 trillion annually on healthcare, higher than any other nation, and representing over 14% of Gross Domestic Product (GDP). This paper accesses the utility of this unequalled level of expenditure through measures of access, cost and quality. While the quality of the U.S. healthcare system is unparalleled in the areas of acute intervention, pharmaceuticals, medical education, and research and development, the provision of routine preventative care is less than optimal. When combined with the inability of a large percentage of the population to access these routine services, we conclude that the demonstrated outcomes of the U.S. healthcare system do not reflect the high cost. Improvements are necessary to provide more equitable access and to attain business efficiencies that will help control costs. These efficiencies can be gained through better industry standardization; especially in licensing and administration. Such efficiencies will require an enhanced government role independent of short-term parochialism. The Government can lead the way to improved efficiency and equity in the thriving healthcare market as it encourages the individual lifestyle changes necessary to reverse the alarming and costly trend towards unhealthy personal choices such as poor diets and habits, sedentary levels of physical activity, and high-risk activities.

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## **INTRODUCTION**

In the preamble of the Constitution the founders of our nation recognized the role of the federal government to “...promote the general welfare” as a means of ensuring our prosperity and security.

Hans Morgenthau cited population as a critical element of national power.<sup>[1]</sup> While measures of a population’s welfare are necessarily subjective, generally accepted indicators include relative wealth, educational attainment and levels of health.<sup>[2]</sup> The U.S. healthcare system is a public good essential to the strength of the nation.

From the provision of medical training, to the development, production and distribution of innovative pharmaceutical products and medical equipment, the U.S. is a recognized global leader in healthcare. While the output of our healthcare system is unequalled in quality, challenges abound in both the distribution of healthcare to our population and in controlling the cost of our healthcare system. This study provides an overview of the scope of the healthcare industry in the U.S., assesses the system’s outcomes as measured by cost, access and quality, and makes recommendations targeted at government’s role in promoting the health of our nation.

## **SCOPE OF THE HEALTHCARE INDUSTRY**

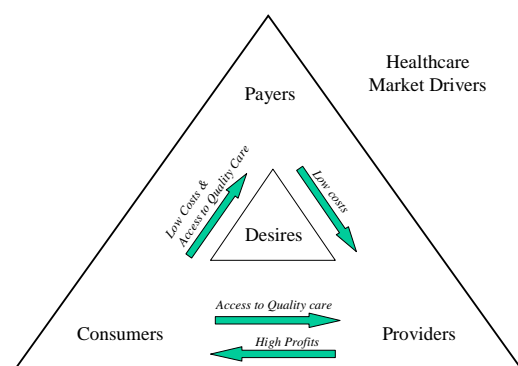
### **Market Drivers**

The function of every economic system is to determine how much of each commodity or service to produce, which inputs should be used to produce each product or service, and how to distribute the

outputs among consumers.<sup>[3]</sup> Free market economies are thought to produce services more efficiently than other forms of economic systems by allowing resource allocation decisions to be made by individual producers and consumers acting in their own best interests without central direction.<sup>[4]</sup> Under perfect competition, the price system would lead buyers and consumers to behave in a way that caused the product's marginal utility to the consumer to equal the marginal cost to the producer. This cost would be reflected in the product's price. That pricing, in turn, would ensure the most efficient allocation of resources.

Micro-economic theory, however, relies upon certain assumptions that are not universally applicable to the healthcare industry. Foremost among these is that individuals exercise choice based on a rational evaluation of the marginal utility relative to price. In the case of healthcare, very few decisions about a personal health transaction are economically rational. In most cases individuals do not directly pay for their choices,<sup>[5]</sup> and in virtually all cases, it is impossible to measure marginal utility because the outcome of their choice is unknown. These invalid assumptions, combined with imperfect information, the propensity for malpractice litigation and the moral hazard inherent in systems of payment reliant upon insurance, contribute to the failure of the market to provide either efficient or equitable healthcare.

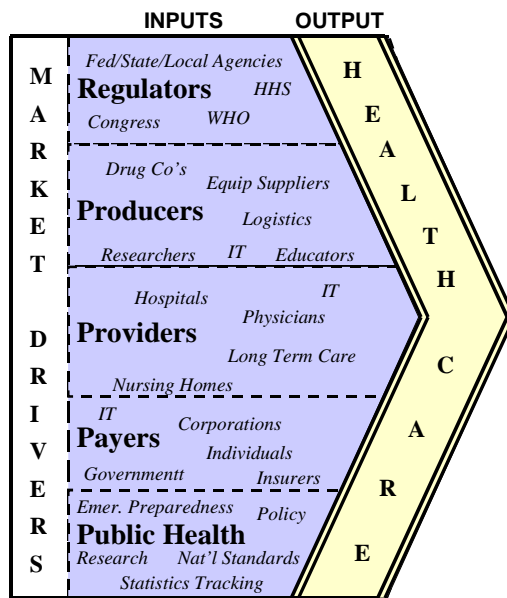
The triangle illustrated below depicts the complexity of a healthcare system that is driven by values more complex than the economic balancing of marginal utility and marginal cost.



Consumers demand timely and high quality care from healthcare providers while simultaneously expecting low personal costs. Their demands and expectations vary with their individual state of health. Payers (both private and government insurers) largely isolate the consumer from the economic consequences of healthcare utilization while demanding that providers maintain low costs. Providers find themselves balancing the competing demands of the consumer, who wants the highest quality care, with that of the payer who demands low costs. To minimize the many externalities associated with this market, all of the actors--consumer, payer, provider, regulator--must agree to a system that provides access to quality healthcare, availability of choices for that care, access to both economic and medical information on which to base decisions, and effective communication with healthcare providers.

### **Inputs to the System**

The U.S. healthcare system is the result of inputs produced by five primary entities acting upon the market drivers discussed in the previous section: payers, producers, providers, regulators and governments (through the public health agencies). As illustrated in the diagram below, the inputs these actors create result in the output of the American healthcare system. This section will summarize select segments of the healthcare industry as categorized by their input into the system.



**Payers:** The American healthcare system has developed complex systems of public and private payment that distort the ability of consumers to make economically rational decisions about their healthcare choices. Only \$206 billion (14.4%) of the \$1.4 trillion spent in 2001 were direct out-of-pocket payments for healthcare. The remainder of the costs was paid by private insurance (\$496 billion, 34.8%), other private sources such as charity (\$76 billion, 5.4%) and public programs (\$647 billion, 45.4%).<sup>[6]</sup> The net cost of administering this complex payment system absorbs over 6% of the Nation's healthcare expenditures.<sup>[7]</sup> Although most individuals do not directly pay for their healthcare choices, individuals ultimately bear the responsibility of paying for the nation's healthcare through taxes, reduced earnings and higher product costs.<sup>[8]</sup> This section will briefly outline the types of payers involved in the U.S. healthcare system.

- **Individuals:** Individuals pay into the healthcare system both directly and indirectly. Households making direct payments into the system constitute the smallest category of payers. Those payments include the direct cost paid by uninsured individuals, but also co-payments for insurance-covered visits to practitioners, prescription drug costs not covered by an individual's insurance plan, and the cost of over-the-counter pharmaceutical and other medical products. Households also pay into the system indirectly through the contributions they make to private health insurance premiums and premiums paid to Medicare trust funds.
- **Private Insurance:** Of the \$496 billion spent on private health insurance premiums, approximately 55% is paid by private employers, 29% by individual households, and governments contribute the remaining 16% for federal, state and local workers.<sup>[9]</sup> There are more than 100 million workers, or 74 % of the adult working population covered by employment-based health benefits. When combined with their families, employment-based health benefits systems cover more than 173 million Americans.<sup>[10]</sup> Employers, both government and private, provide health benefits to workers for several reasons. First, health benefits provide workers and their families with protection from financial losses that can result from unexpected serious illness or injury. Second, healthcare benefits promote health and increase worker productivity. Third, healthcare benefits are a form of compensation to recruit and retain qualified workers and are usually identified by workers as among the most valued of their benefits.
- **Government Programs:** Governments are the largest purchaser and provider of healthcare services

in the U.S. In addition to contributing to private health insurance programs for its employees, in 2001 the federal government paid over \$454 billion and state and local governments paid another \$191 billion. Of the government share of healthcare, Medicare accounted for \$242 billion and Medicaid \$225 billion. Government also provides military and veterans hospitals and facilities.<sup>[11]</sup> Major publicly funded programs include:

Medicare: Medicare is the nation's largest health insurance program, covering nearly 40 million Americans, 65 years of age and older, some disabled people under 65 years of age, and people with End-Stage Renal Disease (permanent kidney failure treated with dialysis or a transplant).

Medicaid: Medicaid is a jointly funded, Federal-State health insurance program for certain low-income and needy people. It covers approximately 36 million individuals including children, the aged, blind, and/or disabled, and people who are eligible to receive federally assisted income maintenance payments.

State Children's Health Insurance Program (SCHIP): S-SCHIP enables states to insure children from working families with incomes too high for Medicaid but too low to afford private health insurance.

***Producers:*** Producers of healthcare products are involved in such diverse areas as pharmaceutical drug development and production, research, medical equipment suppliers, logistics, and education. This section will briefly outline select segments of the product portion of the healthcare industry.

- *Pharmaceutical Drug Industry:* The prescription drug industry is heavily regulated and has significant barriers to entry due to the long and costly process of discovering, developing, testing and securing approval for new drugs. A new drug can take 10 to 15 years to develop and cost more than \$800 million. Breakthrough drugs with billion-dollar sales have become the business model. Generic drugs have a much smaller part of the drug market (8.3% in 2001), but are expected to grow as prescription drug prices continue to rise. Although spending on prescription drugs constituted only 10% of overall healthcare spending in 2001, it is the largest growing cost sector over the last decade, averaging 17% annual growth—with high research and development costs as the leading contributors.

The Food and Drug Administration (FDA) approves patents for ten years, enabling drug firms to recoup development costs in the first two years on the market. The remaining eight years of patent monopoly make the drug industry the most profitable industry in the U.S. Although healthcare companies and government programs pay 75% of all prescription costs, rising costs are becoming an increasing problem for patients as well as healthcare providers, government programs, and employers underwriting healthcare plans. In response, managed care and pharmacy benefit managers are steering patients to generics and using tiered co-pay systems to shift more of the cost for branded drugs to the patient. Given the sharp rise projected in the over 65 age group, growth rates for prescription spending are likely to remain among the highest of all components of national health expenditures.

- *Medical Equipment & Supplies:* The U.S. possesses one of the most mature and advanced medical equipment and supply industries in the world. The excellent transportation and distribution systems in the U.S. contribute significantly to the availability of equipment and supplies. This sector is characterized by short delivery times, quick inventory turn-around, low margins, high volume and a trend toward mergers to create efficiencies. Automation and information technology play a key role in managing this fast response network. Unlike other areas of the healthcare industry, medical equipment and supplies is leading cost-cutting efficiencies for hospitals and medical distribution outlets, such as pharmacies. While modern logistical practices, such as just in time delivery, contribute to the efficiency of this sector within the developed world, lack of infrastructure and investment inhibit such practices in much of the developing world.
- *Research and Development:* The United States leads the world in its investment in healthcare research. In addition to the average 17% spent on drug research and development by private

industry, the U.S. government has embarked on an ambitious program to double National Institutes of Health (NIH) spending on medical research by 2004. NIH's 2003 budget includes a 16.1% increase allocating \$18.3 billion for research. The drug industry benefits from much of the federally financed research in terms of converting that research into a product. This significant investment in research is one of the prime factors that makes the U.S. a leader in the international pharmaceutical market.

**Providers:** The providers include all those who deliver healthcare to the consumer. This segment includes hospitals, clinics, private practitioners, nursing homes and other long term care facilities. This section will summarize the hospital and long term care industry and discuss current manpower challenges among healthcare practitioners.

- **Hospitals:** Hospitals are the largest single segment of the healthcare industry, consuming \$500 billion or 30% of the \$1.6 trillion spent nationally in 2002. Efforts to control the cost of healthcare and improvements in diagnostic and therapeutic options have reduced the average hospital stay from 6.5 days in 1990 to four days in 2002. The total number of hospitals has diminished in the past decade as the pressure to maintain high quality standards has clashed with the fiscal pressures derived from cuts in Medicare/Medicaid reimbursement rates and health maintenance organization payment limits. Many small community hospitals, built with government assistance in the 1960s, no longer enjoy investment from communities or states. Faced with rising maintenance costs and stiffer competition from larger medical centers, many smaller hospitals are closing their doors. Currently there are 5,801 hospitals in the U.S. The government owns 1,156 hospitals, non-profit organizations own 2,998, and for-profit organizations own 754. Non-profit hospitals compete strongly against for-profit hospitals and use surplus revenue to reinvest in the hospital. Hospitals employ 3.3 million full-time and 1.3 million part-time workers—mostly nurses, aides, therapists, and technicians.

Doctors are normally affiliated with hospitals and do not receive a salary from the hospital. <sup>[12]</sup>

- **Long-Term Care Providers:** Long-term healthcare (LTC) is available to persons with a physical or mental disorder that causes them to be unable to function independently. Traditionally, family members provided LTC in the home. In the early 20<sup>th</sup> century, the Government acknowledged that historical methods of LTC were inadequate. It began to seek ways to assist individuals with their LTC needs. Today, approximately 1.5 million Americans reside in nursing home facilities at a current average cost of \$54,000. <sup>[13]</sup> Expenditures on nursing home care have increased 370% since 1980, from \$17.6 to \$82.8 billion annually. <sup>[14]</sup> Nursing home daily costs average \$140/day depending upon location. <sup>[15]</sup> In the Washington D.C. area, assisted-living facilities and nursing homes charge \$95 to \$200 per day equating to \$34,675-\$73,000 annual costs. <sup>[16]</sup> Current projections indicate that annual home care costs will reach \$190,000 annually by 2030 <sup>[17]</sup> and Medicaid expenses for nursing homes are projected to reach nearly \$80 billion by 2005. <sup>[18]</sup> This segment will continue to grow over the next 30 years as the number of elderly increases.

- **Manpower:** There is an increasing shortage of both physicians and nurses that is adversely affecting the quality and availability of healthcare throughout the U.S.

**Nursing:** With more than 2 million jobs and 2.7 million registered nurses, nursing ranks as the largest American healthcare profession. <sup>[19]</sup> A recent report by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), states there is a clear link between staffing levels and quality of care and that “nursing shortages are putting patient lives in danger.” JCAHO analyses show that nurse-staffing levels have been a factor in 24 % of the 1,609 sentinel events reported to the Commission in the past five years. <sup>[20]</sup> Currently, there are over 120,000 open positions for registered nurses. Nursing job vacancy rose from 3% in 1997 to almost 15% in 2000 and continues to climb. <sup>[21]</sup> If current trends continue, the Bureau of Labor statistics



projects that by 2010 the nation will face a deficit of more than a million nurses.<sup>[22]</sup> Although nursing staff drawn from overseas somewhat eases the U.S. shortage it only exacerbates the global shortage of qualified nurses.

**Physicians:** The process of producing a doctor is lengthy and expensive. The average doctor spends four years in medical school followed by a three to eight year residency requirement. Increasing numbers of physicians opt for healthcare work that does not involve direct patient care or leave the profession all together. Declining reimbursement and increasing liability, coupled with double digit increases in practice overhead and malpractice premiums, are issues that not only impact practicing physicians, but also deter new entrants.<sup>[23]</sup> Physicians have seen their malpractice insurance premiums increase by almost 500% in the past two years.<sup>[24]</sup> These costs deter physicians from practicing in less profitable regions of the country and result in a mal-distribution of physicians.

**Regulators:** The healthcare industry is a highly regulated sector of the U.S. economy. Federal and State agencies, such as the Department of Health and Human Services (HHS), the FDA and individual state departments of health regulate quality and equity and promote efficiency and accountability in the healthcare industry. Federally chartered organizations such as JAHCO and voluntary associations such as the American Medical Association (AMA), American Hospital Association (AHA), the American Association of Laboratory Accreditation and others develop and/or implement policies to comply with regulatory requirements. The U.S. also participates in, and provides funding to, international organizations such as the World Health Organization (WHO) to promote transnational health issues.

- **HHS:** With more than three hundred programs, HHS has a broad agenda ranging from medical research to health services for Native Americans. Several of its sub-organizations, such as The Centers for Disease Control and Prevention (CDC), the NIH, and the FDA are highly effective in their specific areas of responsibilities. However, in spite of its broad agenda, HHS is not responsible for leading effective and efficient interaction between regulators, producers, providers and payers.
- **HIPAA:** The 1996 Health Insurance Portability and Accountability Act (HIPAA) provides healthcare guidelines and establishes standards for the protection of private health information. Its major emphasis has been to facilitate the efficient and secure electronic exchange of health information. However, hospitals and other healthcare organizations have so far not assigned a high priority to funding projects that would assure full compliance.
- **JCAHO:** JCAHO seeks to continuously improve the safety and quality of care through healthcare accreditation. Participation in JCAHO is voluntary; however, those professional healthcare organizations that choose not to seek accreditation from JCAHO may receive negative perceptions of their quality.

**Public Health:** The Nation's public health system is a critical component of the country's overall healthcare industry because its primary task is to protect and promote the health of the overall population. Public health programs establish national health standards and policies; help control, prevent, treat, and track diseases; conduct research to improve treatment and prevention of diseases; protect against unsafe food, drugs, and medical devices; improve mental health; address drug and alcohol abuse; expand health resources; and provide healthcare to people in medically underserved areas and to those with special needs. Activities also include population-based public health and clinical preventive services.

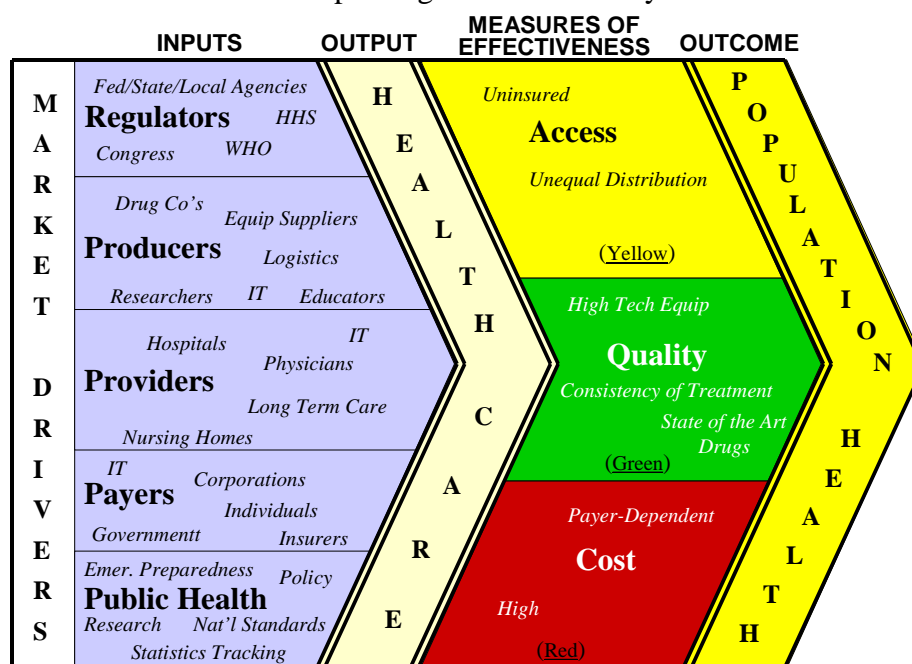
The public healthcare system is primarily a responsibility of government, whether at the Federal, State or local level. The system is taxpayer-funded and issues of affordability, availability and costs, therefore, are more dependent on the size of the tax base. At the state and local level, effectiveness and availability of outputs and services varies and becomes more dependent on the size of the tax base and wealth of the jurisdiction. Public health services benefit everyone by applying sound science to public



health policies and programs; educating people and communities about prevention, health, and the healthcare system; and stimulating research and interventions to improve the Nation's health.

## MEASURES OF EFFECTIVENESS

These varied, and often independent, inputs to the system combine to produce an output that we call *healthcare*. That output can be measured in terms of access, cost and quality--the same market drivers discussed earlier. While the quality of the products of the U.S. healthcare industry are unequalled, challenges in controlling costs and providing access result in a population health that is less than optimal. This assessment is indicated by red, yellow and green shading in the illustration below and amplified in the following section that will summarize observations made during our study and lead to recommendations for improving our healthcare system's outcome.



**Access:** Whether privately or publicly covered, insurance provides the access to the healthcare system that enables regular health monitoring and timely treatment of ailments. Despite our unequalled level of expenditures, 14.6 % of the population has no medical insurance<sup>[25]</sup> and 6.8% of all children have no usual source of medical care.<sup>[26]</sup> Medicare does not provide any prescription drug benefit, leaving many of the Nation's elderly unable to afford essential medications. Many insurance policies also do not provide affordable prescription drug benefits. Contrary to a common belief that most of the uninsured are economically unproductive members of society, 80% of the uninsured live in working families and 25% of all U.S. workers are employed by companies that do not offer insurance. Policies available to individuals are significantly more expensive than the group policies available through employers and the majority of the uninsured simply cannot afford adequate coverage.

The large number of uninsured and under-insured Americans has both financial and social costs.

The uncompensated cost of healthcare to the uninsured in 2001 was between \$35 and \$40 billion.<sup>[27]</sup> Beyond this financial cost, however, is the cost to the health of the individuals themselves. The burden of high medical costs presents a disincentive to seek anything other than acute care. While all Americans enjoy access to high quality acute and emergency services, the inability of millions of Americans to access the system for routine wellness, preventive, and screening services leads to a general degradation of the health of the Nation as a whole. An Institute of Medicine report on the uninsured found that they receive fewer preventive services, such as cancer screenings and blood

pressure checks, and are less likely to receive treatment for chronic conditions that can improve quality of life.<sup>[28]</sup> Failure to obtain pre-natal care contributes to the relatively high infant mortality rate, low birth weights and high maternal mortality rate. Failure to receive preventative screenings and early treatment regimens leads to disabilities, shorter and less productive life spans and a less healthy population.

The cost to individual health and this uncompensated financial burden combine to create other societal costs that are more difficult to measure, yet very real. These societal costs include the risk of contagion, the physiological and emotional health of the community,<sup>[29]</sup> limited financial contributions to community health service institutions,<sup>[30]</sup> and increased healthcare costs and taxes for everyone.<sup>[31]</sup> These costs decrease corporate profit margins and reduce the availability of capital funds for investment,<sup>[32]</sup> increase absenteeism (from both school and the workplace), decrease productivity and are an economic strain on the Nation as a whole.<sup>[33]</sup>

In a market economy the decision on how to distribute the outputs is left to individual choice as regulated by the pricing mechanism. In some instances, however, such a market-based distribution fails to serve society's broader interests or values. Such is the case when the resource allocation process produces externalities (beneficial or negative) or when the resource in question is a public good. In those cases, governments impose a redistribution of wealth through any number of mechanisms to ensure equitable access. Because the health of individuals affects the health and efficiency of so many of the Nation's processes, the healthcare system abounds with externalities. With modest, albeit costly, redistributions the government has attempted to overcome these externalities. To-date, however, it has failed to ensure equitable access to healthcare. Significant improvements are needed to enable access by all Americans to the wellness, preventive, and screening services required to ensure a healthy population.

**Costs:** Spurred by increasing insurance premiums and prescription drug costs, rising healthcare costs are an integral part of the public policy agenda. The U.S. spends more on healthcare than any other country. Per-capita healthcare expenditures of \$5,039 are one third more than the next highest spending country (Switzerland) and almost twice that of Canada.<sup>[34]</sup> Total national health expenditures in 2001 (\$1.4 trillion) were almost three times the national defense budget. By 2012, national health spending is projected to reach \$3.1 trillion. This increase will bring health spending to approximately 18% of gross domestic product (GDP), up from its 2001 share of 14.1%.<sup>[35]</sup> Of the \$1.4 trillion, \$778 billion, or 55%, were from private programs such as private insurance (\$496 billion), out-of-pocket payments (\$206 billion), and private charity (\$76 billion). Public programs accounted for the remaining 45%, or \$647 billion.

- *Cost of Healthcare Goods and Services:* At \$451 million, hospital care accounts for the largest single expenditure. In comparison, physician and clinical services account for \$313 million and prescription drugs consume \$140 million. While the cost of prescription drugs is a small percentage of total healthcare expenditures, it is the fastest growing segment--with cost growth projected to be over 13% in FY 03.<sup>[36]</sup>
- *Cost of Private Insurance:* In 2000, the average annual health insurance was \$2,655 for single coverage and \$6,772 for family coverage. This amounted to an increase from 1996 of 33.3% and 36.7%, respectively.<sup>[37]</sup> The Center for Medicare and Medicaid Services projects 2002 growth will be 11.6%.<sup>[38]</sup> With business expenditures for health services and supplies averaging 58% of after tax profits in 2000,<sup>[39]</sup> industry executives cite the increasing cost of health insurance as a major

factor in decreasing corporate profit margins and reduced availability of capital funds for investment.

[40]

- *Administrative Costs:* A financial system with literally thousands of payers incurs tremendous bureaucratic costs associated with processing, adjudicating and paying claims. The Center for Medicare and Medicaid finds that this administrative burden consumed 6.2% (\$80.9 billion) of healthcare expenditures in America in 2000. [41]
- *Uncompensated Costs:* The uncompensated cost of providing healthcare to the uninsured in 2001 was between \$35 and \$40 billion. Hospitals provided approximately \$20 billion of the uncompensated care with physicians absorbing about \$5 billion and community clinics absorbing the rest. Ultimately, the cost of providing healthcare to the uninsured is borne by the taxpayer.

**Quality:** The high level of healthcare expenditure in this country does not necessarily indicate a failed system. To the extent that consumers are satisfied with the outcomes received, these costs would be acceptable. In some sectors of the industry expenditures do result in the finest available products. Investment in the U.S. healthcare system has resulted in some of the best health-related research and development, bio-technology, and public health programs and the most advanced diagnostic, acute intervention, and treatment technologies in the world. [42] The professional education system in the U.S. produces the finest health professionals in the world. Population wellness and acute care services are provided by the healthcare industry through a number of venues, primarily hospital services, pharmaceuticals, physician care, and public health:

- *Hospitals:* Providing the latest medical procedures and state of the art technologies, supplies, and diagnostic equipment, U.S. hospitals offer the finest healthcare in the world. Cost efficiencies and improvements in diagnostic and therapeutic options have drastically reduced the average length of stay in hospitals. Despite all of the positive aspects of hospital care, hospitals continue to be plagued with problems associated with an aging population, workforce limitations, lack of capital, aging facilities, and death and morbidity due to mistakes. As many as 98,000 people die in U.S. hospitals each year due to medical errors. It is estimated that 70% of these errors are preventable and are the result of system problems and not individual negligence. [43]
- *Pharmaceutical:* The pharmaceutical industry is one of the most dynamic and innovative sectors of the healthcare industry. Its heavy investment in research and development has resulted in a continuous flow of new products that have enhanced overall healthcare quality and longevity. Life expectancy in the U.S. reached a new high in 2001 due in part to the reduction of death rates from the three leading causes of death: heart disease, cancer, and stroke.<sup>2</sup> New drugs played a vital role for all three of these diseases in converting once fatal ailments to chronic conditions managed through medical treatment. Rising pharmaceutical costs, however, are increasing pressure from both managed care and government programs to use lower-priced generic drugs. An unintended consequence of that pressure is reduced capital available for investment in new research—a quality impact.
- *Physician Performance:* While physicians in the U.S. are highly trained and educated and offer the best in healthcare, consumers could still benefit from more information on the expertise and quality of their healthcare providers to help them make more informed decisions about where to seek care. Comparative performance information on physicians has been primarily centered on the patient doctor relationship with the focus being on empathetic qualities, e.g., time, personal attention, caring, good communications skills, showing concern, and bedside manner. Selecting measures of performance that accurately reflect quality of care received is a big challenge, as is meeting the information needs of various audiences and gaining the cooperation of physicians and consumers required to assemble consistent and credible performance data. The field of physician performance measurement is still in its infancy.
- *Prevention vs. Intervention:* While the U.S. healthcare system does an exceptional job with

intervention when it is needed, the more overarching desired outcome is sustained wellness. That outcome requires focused attention by the entire healthcare community on prevention and wellness. Thomas Bassler, of the National Council of Aging, addresses the heart of the issue by saying, “two out of every three deaths are premature; they are related to loafer’s heart, smoker’s lung and drinker’s liver.” [44]

Indeed, the number of deaths per year in the U.S. caused by preventable diseases is alarming: 710,760 from heart disease, 555,090 from cancer, 167,660 from stroke, 122,000 from chronic lower respiratory disease, 97,900 from accidents, and 69,300 from diabetes.

[45] While these numbers are alarming, they become even more so, when juxtaposed against the cost: preventable diseases lead to chronic conditions that account for 70% of all medical spending.

[46] Prevention is clearly key to quality healthcare as well as to improved health outcomes for the majority of the population. Prevention solutions include training for the medical community, a wellness information campaign to the public, and focused leadership from government.

- *Information Technology:* The Institute of Medicine published a report in November 1999 entitled *To Err is Human: Building a Safer Health System*. This report focused national attention on the problem of medical errors. It indicated that information technology plays a vital role in all aspects of healthcare quality, especially as demonstrated in inventory and control, cancer treatment, electronic medical records and information exchange. The healthcare community needs to expand efforts to adopt information technology standards. Uniform terminology and language standards will facilitate the development and increased use of health information systems to support quality patient care. Patient safety can be improved and medical errors reduced by investing in information technology and research to develop improved computerized physician order entry systems, patient records, drug event monitoring capabilities; improved handheld prescription and automated medication dispensing devices and reminder systems; and computer-based support groups for patients. Promoting these systems and providing technical assistance through the public healthcare system for state and local health departments will ensure that patients receive safe, high quality evidence-based care.
- *Public Health:* The Federal Government plays an important role in ensuring the quality of healthcare. Three components of the Nation’s public health service are world-renowned and exemplify the excellence of U.S. public health activities. The NIH, as the world’s premier medical research organization, supports some 35,000 research projects on various diseases. The FDA assures the safety of foods and cosmetics, and the safety and efficacy of pharmaceuticals, biological products and medical devices. The CDC provides a recognized and respected system of health surveillance to monitor and prevent disease outbreaks, implement disease prevention strategies, and maintain national health statistics.

Several major challenges face the U.S. public health system. Most important is a continuing need for funds to apply science to public health policies and program needs and educate people about prevention, health and the healthcare system. Sufficient funding is needed continue to protect and improve the public health, especially related to HIV/AIDS, the food and blood supply, and the health of children, women and minorities. Aggressive actions are needed to attack diseases such as diabetes, obesity, cancer, heart disease, and stroke, as well as to address the lifestyle choices associated with them, including tobacco use, physical activity and nutrition, and youth risk taking.

Bio-terrorism poses a relatively new and serious threat to national security and public health. It is critical that the Nation take all measures necessary to be prepared to respond in the event of an attack. Defending against such an attack requires focused national leadership and a strong public health and medical infrastructure with robust and sensitive disease and epidemiological surveillance systems, or bio-surveillance. Even though there is already a high level of bio-surveillance program activity underway, there remains an urgent need to do more. The front lines of bio-terrorism defense are at the state and local levels and this is where efforts should focus to upgrade public health and medical bio-surveillance capabilities.

## POLICY RECOMMENDATIONS

Our study of the healthcare industry revealed a complex and fragmented system of products and services that produce less than optimal health outcomes for our population. While the quality of U.S. healthcare is good, disparities in access due to high cost have resulted in national health outcomes that, in some cases do not compare favorably with those of other industrialized nations.

However, our visits to healthcare and government organizations in Tunisia and the United Kingdom, as well as our briefing from a Canadian authority, and our industry survey, convinced us that no country in the world is doing an excellent overall job on healthcare. Other countries have their own rationing schemes. Canada and the UK, for example, limit access through queuing time. Tunisia provides a very basic level of care to all, while quality and comfort are available at a substantially increased price at private clinics. The failure of earlier initiatives to improve the U.S. healthcare system, however, highlights the challenges (political and cultural) of achieving a more equitable and efficient healthcare system. Our policy recommendations therefore, focus on four specific areas of interest within the healthcare industry: costs, access, governance and lifestyle.

**Access:** The primary cause of our less than optimal health outcomes arises from disparities in access to healthcare services. The high cost of access to America's healthcare system, exacerbated by complex and inequitable combinations of private and public funding, consume the highest level of expenditures in the world while leaving over 41 million Americans with no health coverage and producing health outcomes that fall below those of many other developed nations. Only for the elderly or severely disadvantaged does the Federal Government accept responsibility for healthcare. The millions of uninsured and underinsured Americans, who, for various economic and social reasons, have access to only acute or emergency services, risk imposing unacceptable social and economic burdens on society. Government should acknowledge that access to a basic level of routine preventative healthcare is a public good essential to the strength of the Nation.

- *Recommendation:*

- a. Define and establish minimum levels of healthcare that will be accessible to all Americans, regardless of ability to pay. Such access should concentrate on routine prevention and intervention necessary to promote health while continuing to provide acute and emergency services for all. Access to such basic services can be attained by extending Medicaid coverage to all those who find themselves uninsured while requiring means-tested household contributions to minimize the externalities that degrade the efficiency of the market system. Access to healthcare above the minimum established standard would continue to be available through private payments.

- b. Monitor the supply of medical providers and designate areas that could benefit from an increase in the supply of physicians. Offer scholarships to eligible students who contract to work in underserved areas, enforce their service in those areas, and ensure the training pipeline provides ample training slots to assure an adequate supply of providers.

**Cost Reduction:** Reducing cost requires eliminating the inefficiencies that stem from underutilization of information technology and from lack of standardization in administrative practices and policy. Each of the 50 states implements different standards for everything from practitioner licensing to Medicaid eligibility. In a system with thousands of independent hospitals, hundreds of thousands of independent office practices, and thousands of different payers, such fragmentation creates inefficiencies and drives up costs. Even in the Federal Government, multiple divisions of healthcare—e.g. VA, DoD, Indian Health etc.—have no consistent or standardized policy for care guidelines or administration. The disparity in standards for patient records, whether paper or non-interoperable electronic form is but one example of inefficiency. The \$80 billion spent on administration is another.

- *Recommendation:*

- a. Improve the use of information technology throughout the industry.

- Establish electronic medical data standards and mandate that electronic medical data

conform to privacy standards in accordance with HIPAA and meet new interoperability standards for linking medical information between need-to-know service centers such as doctor offices, hospitals, pharmacies and public health offices.

Establish independent electronic medical record (EMR) banks as the repository of individual health data. EMR banks would ensure privacy and be responsible for controlling access authorized solely by the patient or by law.

b. Nationalize the licensing function from the current decentralized operation of 50 independent State health-licensing boards enabling providers to freely commute across state boundaries with all privileges while establishing the capability to centrally track adverse actions.

c. Standardize insurance company billing formats. Interoperable billing formats would allow centralized billing offices shared between large numbers of physicians to benefit from economy of scale.

d. Control the costs of prescription drugs by leveraging the Government's buying power to negotiate best prices for government-purchased drugs.

**Governance:** Questions of equity and access strike at the core of American values of individual liberties and free markets. As such, they spark emotional partisan political debate that inhibits cooperation to promote the public good of universal access and cost control. Government has a central role in ensuring the health of the population while promoting the efficiency of the market. Implementing change to an industry that consumes 14% of the American GDP and directly impacts all other aspects of the U.S. economy requires strong leadership and non-partisan, rational governance.

- *Recommendation:*

Stand-up a Federal Healthcare Board (FHB) comprised of representatives from the major healthcare industry sectors, consisting of state sub-boards, and similar to the structure and status of the Federal Reserve Board system. The FHB would have the power to establish health policy and set industry standards free from the partisanship of Congress. The charter of the FHB would be to guide the healthcare market by managing supply distribution and demand fluctuations to achieve the overarching goals of managing cost through competition and improving access through increased supply, while ensuring a system that encourages innovation and expands the medical frontier. The FHB would be responsible for setting health information and standards policy, defining basic healthcare for Americans, stimulating the supply of healthcare professionals, and encouraging healthy lifestyles for Americans.

**Lifestyle:** The most alarming trend in the health of the population is not in access, cost or efficiency, but in the increasing prevalence of preventable disease related to lifestyle choices. Sedentary lifestyles, poor eating, smoking and drinking habits contribute to the high rate of chronic diseases. While it is difficult to regulate lifestyles, it is possible to provide incentives to promote healthy choices.

- *Recommendation:*

a. Increase education and incentives to reduce smoking and drinking.

b. Provide incentives through decreased insurance premiums for those households that demonstrate healthy lifestyles.

c. Establish an active public information and education program targeted at America's youth to promote physical activity and healthy eating habits. Fund improved public fitness facilities to include community fitness centers, bicycle trails and walking paths.

d. Mandate increased physical education in America's schools.

## CONCLUSION

The above policy recommendations are aimed at the healthcare *system*: providers, producers, government, payers and consumers. They do not attempt to solve the entire spectrum of challenges. Instead, they attempt to address systemic challenges, while focusing on the realm of the possible. Funding will always be an issue; which is exactly why the fundamental choice that Americans must make is one of priority. What priority will Americans assign to healthcare as our society ages? This



question will be answered individually in terms of personal lifestyle choices. It will also need to be answered collectively in terms of resource allocation decisions. The writers of this paper, all aging baby-boomers, have a stake in the answers to these questions. Armed now, with increased knowledge, we aim to track (and perhaps engage in) the public discourse as our government and society wrestle with this extremely tough issue.

## **Individual Student Paper Summary: Megs Hepler**

### **BIOTERRORISM PREPAREDNESS THROUGH PUBLIC HEALTH AND MEDICAL BIO-SURVEILLANCE**

#### **Introduction**

The first sign of a bio-terrorism attack may be as inconspicuous as a flag on a computer screen in a small community. This seemingly innocuous signal could mark the beginning of a national public health nightmare and response to a biological weapons attack. If not contained, its effects could spread, causing an epidemic and threat to national security and the survival of our population.<sup>[47] [48]</sup> Defending against such an attack requires a strong public health and medical infrastructure with robust and sensitive disease and epidemiological surveillance systems, or bio-surveillance, to detect attacks early on and quickly identify and distinguish between naturally occurring diseases and intentional releases. Bio-surveillance systems play an important role in the front line defense against bio-terrorism.

#### **Bio-terrorism Threats and Public Health Protection**

The U.S. faces daunting challenges in preparing for biological terrorism. Biological weapons are becoming more lethal, accessible, and affordable and future attacks will likely involve diseases occurring infrequently in nature. Medical and public health authorities may have limited experience dealing with these diseases because they won't follow known epidemiological patterns. Genetically engineered biological weapons consisting of virulent disease agents may have greater destructive potential than natural diseases.<sup>[49]</sup> Smallpox; typhoid; typhus; anthrax; plague; viral hemorrhagic fevers (Ebola, Marburg, and Lassa); aflatoxin; and botulinum and shigella toxins are some of the most dangerous bio-agents.<sup>[50]</sup> U.S. military forces are relatively well prepared for bio-terrorism attacks, but the U.S. as a whole is far from having solutions to deal with large-scale treatment of the civilian population following a biological attack.<sup>[51]</sup> HHS, particularly the Public Health Service and the CDC, is responsible for managing the health effects of terrorist attacks.<sup>[52]</sup>

#### **Bio-surveillance and Detection Systems**

The national concept of operations for early bio-terrorism response relies heavily on bio-surveillance to detect attacks. The concept is that sudden spikes in everyday aches and pains may signal the early stages of a massive biological attack. Epidemiologists call this strategy "syndromic" surveillance because it looks for increases in clusters of symptoms or "syndromes," rather than particular disease diagnoses.<sup>[53]</sup> Passive and active bio-surveillance systems are used. Passive systems that rely on voluntary disease reporting from healthcare providers are most prevalent, but these systems are notorious for low sensitivity, lack of timeliness and reliability, and minimal coverage.<sup>[54]</sup> Active systems proactively search for and identify new cases and are more timely and accurate, but require more trained epidemiologists and healthcare workers to collect and analyze the data.<sup>[55]</sup> The number of bio-surveillance and detection programs are increasing, with many funded by the federal government in cooperation with state and local public health and medical communities.

#### **Federal Activities**

CDC funds several programs designed to improve bio-surveillance capabilities such as the Emerging Infections Program; Exemplar Centers; Epidemic Intelligence Service; Epidemiology and Laboratory Capacity for Infectious Diseases Cooperative Agreement; Epidemic Information Exchange; Health Alert Network; Laboratory Response Network; and National Electronic Disease Surveillance

System<sup>[56]</sup> Other federal departments are implementing a variety of systems as well<sup>[57]</sup>

### **State and Local Activities**

Two unique bio-surveillance systems tested during the 2002 Winter Olympics in Salt Lake City, continue to operate in conjunction with the University of Utah. The Advanced Logic for Event Detection in Real Time (ALERT) system and the Real-Time Outbreak and Disease Surveillance (RODS) system detect real time patterns of symptoms indicating a possible bio-terrorist attack or disease outbreak.<sup>[58]</sup> A new system, Patient and Population-Based Anomaly Detection and Assessment, will collect and compare population data with patient data to assess the risks of unanticipated diseases.<sup>[59]</sup> New York City uses syndromic bio-surveillance to analyze data from hospital emergency rooms, the 911 system, ambulance dispatches, drugstore sales, and absentee statistics to detect sudden spikes in symptoms. Seattle monitors reports from hospital emergency rooms, primary care clinics, and 911 dispatches; Baltimore, collects data on dog and cat deaths, school absenteeism, and cold medicine sales; and Kansas City, collects microbiology and lab data as part of bio-surveillance activities.<sup>[60] [61]</sup>

### **Private Sector and Academic Activities**

Several private sector bio-surveillance projects are underway. CDC is sponsoring the Harvard Consortium to develop a pilot early-warning bio-surveillance network.<sup>[62]</sup> Siemens Medical Solutions operates a Health Surveillance Network linking 225 Pennsylvania hospital emergency departments, the first under homeland security legislation authorizing states to institute programs to detect bio-terrorism threats, disease outbreaks, and epidemics.<sup>[63]</sup> Johns Hopkins University and the University of Maryland are partnered on a bio-surveillance project in Baltimore.<sup>[64]</sup>

### **Recommendations for Improving Capabilities in Bio-terrorism Surveillance**

In today's global environment, infectious diseases can threaten public health everywhere. Threats to public health also threaten national security. The worldwide emergence of new infectious diseases and the re-emergence of old ones led a recent National Intelligence Estimate to conclude that new and emerging infectious diseases pose a rising global threat that will complicate U.S. and global security in the next 20 years.<sup>[65]</sup> As George White Jr., Director of Public Health Programs at the University of Utah, correctly pointed out, "An early surveillance system all across America will be an unbelievable benefit for us in combating natural diseases, and a sheer necessity to respond rapidly and appropriately to biological agents."<sup>[66]</sup>

Since the front lines of bio-terrorism defense are at the state and local levels, this is where efforts must be focused to upgrade public health and medical bio-surveillance capabilities. The core capacities of the medical and public health infrastructure can be improved with additional training and resources. A national cadre of first responders, public health officials, and medical providers should be trained to recognize clusters of symptoms and unusual diseases that indicate emerging health problems or a biological attack. Partnering activities are needed to reinforce the need for closer cooperation between the public health and medical provider communities in detecting bio-terrorism.<sup>[67]</sup>

CDC should increase efforts to enhance local epidemiological expertise, diagnostic lab capacities, and collaboration. Development of standard reporting formats, more highly integrated and reliable communications and data management systems, and more comprehensive computer linkages can facilitate rapid collection, analysis, and information exchange between labs, public health departments, the medical community and research facilities. Regional centers should be established for quick data compilation and analysis.<sup>[68]</sup> The public health, medical, and scientific communities must

work in closer partnership to research biological agents and diseases.<sup>[69]</sup> All states should enact the Model State Emergency Health Powers Act to give states increased legal powers to detect and contain bio-terrorism and natural disease outbreaks.<sup>[70]</sup> Greater cooperation in all areas can produce bio-surveillance, predictive, and detection devices with dual uses in national security and routine healthcare.<sup>[71]</sup>

Stronger leadership and commitment are needed at the federal level to achieve the cohesion and coordination needed to improve bio-surveillance. Rather than new programs, a more coordinated approach to improve current programs is needed.<sup>[72]</sup> A “bio-terrorism czar” with national visibility and the authority to create a cohesive and comprehensive public/private national bio-surveillance program and serve as an advocate for obtaining additional resources is key. Upgrading our bio-surveillance capabilities should be a national goal pursued with the same vigor as missile defense. This effort must be viewed in the context of funding resources to improve health, defense, and homeland security since it will help to deepen the Nation’s protective shield and defenses against bio-terrorism. Public health is a critical pillar of the national security framework. The future health and prosperity of the Nation may depend on the strength of this pillar.

## Individual Student Paper Summary: Gregory (Taylor) Chasteen

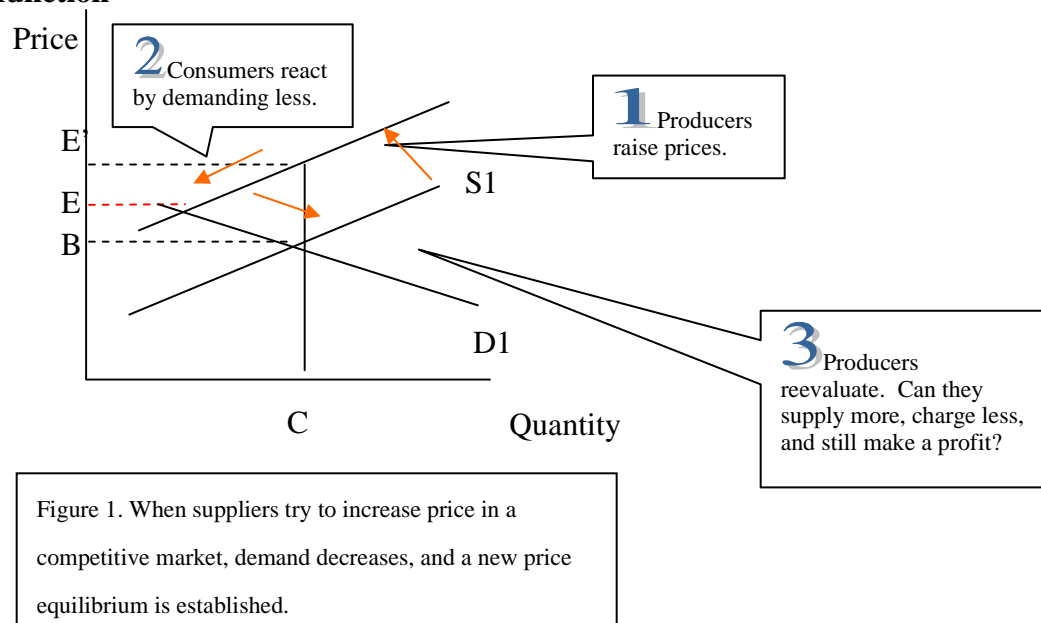
### THE COST PROBLEM: WHAT DO WE REALLY WANT FROM OUR HEALTHCARE SYSTEM?

What do Americans really want from our healthcare system? How much are we willing to spend? If asked, most citizens would answer affirmatively to the following question. Do you want an affordable system, accessible by all, providing the best quality healthcare service in the world? Yet, to achieve these ends, we must stipulate that one does not look to Government as the best manager of costs. Likewise, one should never trust free markets to be equitable for all. Moreover, neither the private nor public sector should have sole responsibility for pushing the frontier of healthcare possibilities.

#### **The Cost Problem**

According to the Office of Management and Budget (OMB), healthcare government payments, which account for over 60% of the total National Healthcare Expenditures (NHE), rose from \$13.9 billion in 1970 to \$850 billion in 2002. Today healthcare costs make up almost a quarter of our annual national budget. The total NHE for 2002 was \$1.5 trillion. This figure is projected to grow to \$2.8 trillion by 2011—almost doubling in less than ten years. This situation is neither desirable nor sustainable.

#### **Economic Dysfunction**



The principle of scarcity says that there are not enough resources in the world for each person to have everything he or she wants.<sup>[73]</sup> Therefore, there must be discipline in the way we *allocate* the Nation's resources. In a free market economy, we ask the market to discipline society. Other forms of government, such as socialism and communism, discipline society's wants through central rationing. This has proven to be equitable but inefficient in terms of realizing the possibilities of the production frontier. For a competitive market to discipline society, the price mechanism must function. For example, Figure 1 illustrates what should happen if suppliers tried to raise prices by shifting the supply curve upward to E'. Consumers would show some sensitivity by lowering demand and establishing a new equilibrium at price E. Existing suppliers and potential new entrants would determine if they could produce higher quantities at that price and still make a profit. Quantity produced would increase until

marginal cost was equal to marginal revenue. The market would establish a new equilibrium at a lower price. By allowing the price mechanism to work as a forcing function, we can determine if the economics support increased quantity at lower prices or if the supplier was simply trying to increase profits by raising prices. With a view toward pure economic good, this is how rational free markets efficiently allocate society's resources.

However, the “invisible hand” of the market is not allowed to work because governmental policies have created conditions that inflate demand by contributing to its inelasticity and constrain supply by stifling competition. Therefore, the price mechanism cannot function properly in the U.S. healthcare industry. Whether consumers demand more or suppliers raise prices, costs continue their march onward and upward.

### **Healthcare as a public good**

It is not realistic to view healthcare in such an ideal economic environment. According to the US Census 41.2 million Americans or 14.6 % of the population have no medical coverage.<sup>[74]</sup> Many consider healthcare a public good with a value that is difficult to measure in straightforward economic terms.<sup>[75]</sup> As such, a certain level of healthcare should be accessible by all citizens and legal residents.

### ***Conclusion***

Just as it is naïve to believe that perfect competition will allocate resources in such a way to achieve access to a reasonable standard of healthcare, it is equally disingenuous for politicians to suggest that government will use dollars more efficiently to provide more and better healthcare services. Therefore, we should trust the “invisible hand” of the market to allocate resources efficiently--release the power of free markets to provide price competition to manage cost and to encourage innovation. Government however, does have an important role to play. It can begin by consolidating the fractious governance of healthcare under a single Federal umbrella and de-politicizing healthcare issues by appointing an independent board of governors. Then, facilitate industry efficiency by lifting regulations, establishing standards, and coordinating licensing, certifications and healthcare activities among states. Moreover, government should soften the cruel edge of free markets.

We must address the uninsured. First, we must ask who are these people. Certainly, government must safeguard the health of our most vulnerable in society—indigent aged, truly disabled and the very young. Others who choose not to purchase health insurance but are able to work should be required to pay for comprehensive insurance according to their ability to pay. This would preserve the economic principle of scarcity and introduce more elasticity into the demand curve. Generally, the most constructive role government could play in order to achieve affordable healthcare for all is to facilitate market structures in the private sector that are competitive while providing a social safety net for those at the margins.



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